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EXAMINER	
BAUGH, APRIL L	
ART UNIT	**PAPER NUMBER**
2141	17

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/459,815	SKENE ET AL.
	Examiner	Art Unit
	April L Baugh	2141

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32,34-37 and 39-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32,34-37 and 39-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant amended claims 1, 4, 7-12, 14-15, 18, 19, 21, 37, 40, 48-50, 55, and 59 and canceled claims 33 and 38 therefore claims 1-32, 34-37, and 39-60 are now pending.

Response to Arguments

1. Applicant's arguments with respect to claims 1, 37, 40, 50, 55, 59, and 60 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim1-7, 16-22, 30-32, 37, 39, 50, 51, 54, 55, 59, and 60 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al. in view of Hu and further in view of Takahashi et al.

Regarding claim 1, Brendel et al. teaches a method for balancing a load on a plurality of servers that provide access to resources associated with a domain name, comprising: (a) receiving a request for access to resources associated with the domain name; (b) determining the load for each of a plurality of servers that provide access to resources associated with the domain

name and selecting one of the plurality of servers to provide the access, the selection of the server being based on a determination for optimally balancing the load on the plurality of servers; (column 6, lines 20-26) and (c) based on the determination for optimally balancing the load, resolving an Internet protocol (ip) address of the selected server so that the accessing of resources associated with the domain name at the resolved ip address of the selected server will cause the load to be optimally balanced on the plurality of servers on a network (column 5, lines 33-40 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach determining the load out of band for each of a plurality of servers. Hu teaches determining the load out of band for each of a plurality of servers (column 2, line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. by determining the load out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Hu by selecting an IP address

associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Referring claim 37, Brendel et al. teaches a system for balancing a load on a plurality of virtual servers that provide access to resources associated with a domain name (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al), comprising: (a) a memory for storing logical instructions; and (b) a processor for executing the logical instructions stored in the memory, the execution of the logical instructions causing functions to be performed (column 7, lines 51-52 and column 12, line 16 of Brendel et al.), including: (i) receiving a request for access to resources associated with the domain name; (ii) determining the load for each of a plurality of virtual servers that provide access to resources associated with the domain name and selecting one of the plurality of virtual servers to provide the access, the selection of the virtual server being based on a determination for optimally balancing the load on the plurality of virtual servers (column 6, lines 56-57 of Brendel et al.); and (iii) based on the determination for optimally balancing the load, resolving an Internet protocol (ip) address of the selected virtual server so that the accessing of resources associated with the domain name at the resolved ip address of the selected virtual server by the client will optimally balance the load on all of the virtual servers on a network (column 2, lines 29-32 and column 5, lies 33-40 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach determining the load out of band for each of a plurality of servers. Hu teaches determining the load out of band for each of a plurality of servers (column 2,

line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. by determining the load out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Hu by selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Regarding claim 50, Brendel et al. teaches an apparatus for balancing a load on a plurality of virtual servers that provide access to a resource associated with a domain name (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.), comprising: (a) a memory for storing logical instructions; (b) a transceiver for communicating over a network; (c) a processor for executing the logical instructions stored in the memory, the execution of the logical

instructions causing actions to be performed (column 7, lines 51-52 and column 12, line 16 of Brendel et al.), including: (i) receiving a request from a client for access to a resource associated with the domain name; (ii) collecting metric information related to communication between at least one local DNS that is associated with the client and at least one of the plurality of virtual servers, wherein the metric information is employable for determining the load on at least one of the plurality of virtual servers (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.); (iii) determining the load for each of a plurality of virtual servers that provide access to the resource associated with the domain name and selecting one of the plurality of virtual servers to provide the access, the selection of the virtual server being based on a determination for balancing the load on the plurality of virtual servers; and (iv) resolving an Internet protocol (IP) address of the selected virtual server, wherein a subsequent accessing of the resources associated with the domain name at the resolved IP address of the selected virtual server by the client will cause the load to be balanced on the plurality of virtual servers (column 6, lines 20-26 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach collecting metric information out of band. Hu teaches collecting metric information out of band (column 2, line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. by collecting metric information out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to

resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Hu by selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Regarding claim 55, Brendel et al. teaches a system for balancing a load on a plurality of virtual servers that provide access to a resource associated with a domain name (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.), comprising: (a) a server array controller that balances the load on a plurality of node servers, wherein the server array controller generates each virtual server based on at least a portion of the capacity of at least one of the plurality of node servers; and (column 2, lines 18-28 of Brendel et al.) (b) an EDNS that provides for balancing the load on the plurality of virtual servers, the EDNS performs actions, including: (i) collecting metric information related to the plurality of virtual servers, wherein the metric information is employable for determining the load on at least one of the plurality of virtual servers (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.); (ii) determining the load for each of the plurality of virtual servers that provides access to the resource associated with the domain name and selecting one of the plurality of virtual servers

to provide the access, the selection of the virtual server being based on a determination for balancing the load on the plurality of virtual servers and including the resolved Internet protocol (IP) address of the selected virtual server; and (iii) in response to a request from a client for access to the resource associated with the domain name, enabling the resolved IP address of the selected virtual server to be provided to the client, wherein a subsequent and separate accessing of the resource associated with the domain name at the resolved IP address of the selected virtual server by the client causes the load to be balanced on the plurality of virtual servers (column 6, lines 20-26 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach collecting metric information out of band. Hu teaches collecting metric information out of band (column 2, line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. by collecting metric information out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Hu by selecting an IP address

associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Referring to claim 59, Brendel et al. teaches an agent for balancing load on a plurality of virtual servers that provide access to a resource associated with a domain name (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.), wherein the agent performs actions, comprising: (a) collecting metric information related to at least one of the plurality of virtual servers, wherein the metric information is employable for determining the load on at least one of the plurality of virtual servers (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.); (b) providing the metric information to an EDNS, (c) enabling the EDNS to employ the metric information to determine the load for each of the plurality of virtual servers that provide access to the resource associated with the domain name and select one of the plurality of virtual servers to provide the access, the selection of the virtual server being based on a determination for balancing the load on the plurality of virtual servers and including the resolved Internet protocol (IP) address of the selected virtual server; and (d) in response to a request from a client to access the resource associated with the domain name, enabling the EDNS to provide the resolved IP address of the selected virtual server, and wherein a subsequent and separate accessing of the resource associated with the domain name at the resolved IP address of the selected virtual server by the client causes the load to be balanced on the plurality of virtual servers (column 6, lines 20-26 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach collecting metric information out of band. Hu teaches collecting metric information out of band (column 2, line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. by collecting metric information out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Hu by selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Regarding claim 60, Brendel et al. teaches an apparatus for balancing a load on a plurality of virtual servers that provide access to a resource associated with a domain name (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.), comprising: (a) means for receiving a request from a client for access to a resource associated with a domain name; (b)

means for collecting metric information related to communication between at least one local DNS that is associated with the client and at least one of the plurality of virtual servers, wherein the metric information is employable for determining the load on at least one of the plurality of virtual servers (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.); (c) means for determining the load for each of a plurality of virtual servers that provide access to the resource associated with the domain name and selecting one of the plurality of virtual servers to provide the access, the selection of the virtual server being based on a determination for balancing the load on the plurality of virtual servers; and (d) means for resolving an Internet protocol (IP) address of the selected virtual server, wherein a subsequent accessing of the resource associated with the domain name at the resolved IP address of the selected virtual server by the client will cause the load to be balanced on the plurality of virtual servers (column 6, lines 20-26 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach collecting metric information out of band. Hu teaches collecting metric information out of band (column 2, line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. by collecting metric information out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the

access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Hu by selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Referring to claim 2, Brendel et al. teaches the method of Claim 1, further comprises querying a local Domain Name System (DNS) to provide the ip address associated with the domain name (column 2, lines 29-32 of Brendel et al.).

Regarding claim 3, Brendel et al. teaches the method of Claim 2, wherein when the ip address is not present at the local DNS, querying a primary DNS to resolve the ip address associated with the domain name (column 2, lines 27-28 of Brendel et al.).

Referring to claim 4, Brendel et al. teaches the method of Claim 3, wherein when the primary DNS determines the domain name is delegated to a EDNS, further comprising referring the local DNS to the EDNS to resolve the ip address for the selected server, the EDNS employs at least one of a plurality of load balancing determinations to select one of the plurality of servers and resolve the ip address for the selected server (column 2, lines 20-28 of Brendel et al.).

Regarding claim 5, Brendel et al. teaches the method of Claim 4, wherein the EDNS includes the primary DNS (column 2, lines 20-23 of Brendel et al.).

Referring to claim 6, Brendel et al. teaches the method of Claim 4, wherein the EDNS includes a secondary DNS (column 2, lines 27-28 of Brendel et al.).

Regarding claim 7, Brendel et al. teaches the method of Claim 4, wherein the EDNS is a primary EDNS, the primary EDNS collecting metric information employed by the selected load balancing determination to select the server to provide access to the resources associated with the domain name (column 6, lines 53-58 of Brendel et al.).

Referring to claim 16, Brendel et al. teaches the method of Claim 4, further comprising a server array controller for managing access to at least one of the plurality of servers, the server array controller being in communication with the EDNS (column 2, lines 18-28 of Brendel et al.).

Regarding claim 17, Brendel et al. teaches the method of Claim 16, wherein the server array controller is a BIGIIP server array controller (column 10, lines 9-13 of Brendel et al.).

Referring to claim 18, Brendel et al. teaches the method of Claim 1, wherein the selected server is a stand-alone server (column 20, lines 65-67 of Brendel et al.).

Regarding claim 19, Brendel et al. teaches the method of Claim 4, further comprising an agent program that collects the metric information and communicates the collected metric information to the EDNS when the EDNS is not resolving the ip address for the resources associated with the domain name request (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.).

Regarding claim 20, Brendel et al. teaches the method of Claim 1, wherein the network comprises a wide area network, Internet and intranet (column 8, lines 18-19 and column 16, lines 36-37 of Brendel et al.).

Referring to claim 21, Brendel et al. teaches the method of Claim 4, further comprising a wide ip that maps the domain name to at least one server, the wide ip being employed when the primary DNS is separate from the EDNS (column 2, lines 36-43 of Brendel et al.).

Regarding claim 22, Brendel et al. teaches the method of Claim 21, wherein the wide ip maps the domain name to one of the plurality of load balancing determinations (column 3, lines 2-6 of Brendel et al.).

Referring to claim 30, Brendel et al. teaches the method of Claim 22, wherein the statistics for the wide ip include weighting values for the servers managed by a particular server array controller (column 1, line 9 of Brendel et al.), weighting values for the servers managed by another Host machine (column 1, lines 37-39 of Brendel et al.), the number of successful domain name resolutions, the number of unsuccessful name resolutions (column 2, lines 27-28 of Brendel et al.), the load balancing modes used for the pool of servers managed by each server array controller, the load balancing modes used for the pool of servers managed by each Host machine (column 3, lines 5-6 of Brendel et al.), the number of servers managed by each server array controller that are used to load balance a specified wide ip, and the number of servers managed by each host machine that are used to load balance the specified wide ip (column 3, lines 31-32 of Brendel et al.).

Regarding claim 31, Brendel et al. teaches the method of Claim 4, wherein the EDNS employs an iQuery protocol to communicate the metric information from the agent program to the EDNS (column 2, lines 27-28 and column 10, lines 21-24 and column 23, line 51 of Brendel et al.).

Referring to claim 32, Brendel et al. teaches the method of Claim 1, wherein the EDNS is a 3DNS server (column 2, lines 27-28 of Brendel et al.).

Referring to claim 39, Brendel et al. teaches a computer readable medium having computer executable instructions for performing the method recited in Claims 1, 4, 19 or 23 (column 23, line 51 of Brendel et al.).

Regarding claim 51, Brendel et al. teaches the apparatus of claim 50, wherein at least a part of the collected metric information is employable in the determination of the selected virtual server for balancing the load on the plurality of virtual servers (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.).

Referring to claim 54, Brendel et al. teaches the apparatus of claim 50, wherein the performed actions further comprise enabling an agent disposed on a node server to communicate metric information to at least one of a virtual server, server array controller, and an EDNS (column 1, line 9 and column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.).

1. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. as applied to claim 1-7, 16-22, 30-32, 37, 39, 50, 51, 54, 55, 59, and 60 above and further in view of Joffe et al. and Guenthner et al.

Regarding claim 8, Brendel et al. in view of Hu and further in view of Takahashi et al. teaches the method of Claim 4, wherein selecting one of the plurality of servers that will optimally balance the load and round robin (column 3, lines 5-6 of Brendel et al.).

Brendel et al. in view of Hu and further in view of Takahashi et al. does not teach static load balancing determinations being selectable and including random, static ratio, global availability and topology. Joffe et al. teaches further comprises choosing the server based on one of a plurality of static load balancing determinations for each server (column 2, lines 63-65 of Joffe et al.), the plurality of static load balancing determinations being selectable and including global availability and topology (column 3, lines 9-10 of Joffe et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. in view of Hu and further in view of Takahashi et al. by choosing the server based on one of a plurality of static load balancing determinations for each server because this allows the system to balance the load throughout the network.

Brendel et al. in view of Hu and further in view of Takahashi et al. and Joffe et al. does not teach the plurality of static load balancing determinations being selectable and including random. Guenthner et al. teaches the plurality of static load balancing determinations being selectable and including random (column 2, lines 24-25 of Guenthner et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. in view of Hu and further in view of Takahashi et al. and Joffe et al. by plurality of static load balancing determinations being selectable and including random because this is a technique for balancing the load in a network.

2. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. as applied to

claim 1-7, 16-22, 30-32, 37, 39, 50, 51, 54, 55, 59, and 60 above and further in view of Shah et al. and Joffe et al.

Regarding claim 9, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of claim 4 wherein selecting one of the plurality of servers that will optimally balance the load comprises choosing the server based on one of a plurality of dynamic load balancing determinations for each server (column 2, lines 50-52 of Hu), the dynamic load balancing determinations being selectable and including completion rate (column 9, lines 20-22 of Hu).

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach least connections, packet rate, hops, or round trip time. Shah et al. teaches hops (column 2, line 28 of Shah et al.), round trip times (column 1, lines 9-10 of Shah et al.), quality of service and dynamic ratio. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by having least connections, packet rate, hops, or round trip time be used to load balance because this are techniques for dynamically load balancing a network.

Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al. does not teach least connections and packet rate. Joffe et al. teaches least connections (column 3, line 67 of Joffe et al.), packet rate (column 4, line 3 of Joffe et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and

further in view of Takahashi et al. and Shah et al. by least connections and packet rate being used to balance a network because this are techniques for dynamically load balancing a network.

3. Claim 10-12 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. as applied to claim 1-7, 16-22, 30-32, 37, 39, 50, 51, 54, 55, 59, and 60 above and further in view of Guenthner et al.

Regarding claim 10, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of Claim 4, further comprising selecting one of the plurality of load balancing determinations.

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach of time stamps. Guenthner et al. teaches selecting one of the plurality of load balancing determinations as a primary load balancing determination, the primary load balancing determination being used to select the server when a time stamp is not expired, the time stamp being associated with metric information used by the primary load balancing determination (column 1, lines 50-52 and column 2,lines 44-45 of Guenthner et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by primary load balancing determination being used to select the server when a time stamp is not expired because this allows the system to choose a primary way of balancing the network.

Referring to claim 11, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of Claim 10, further comprising selecting one of the plurality of load balancing determinations.

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach of time stamps. Guenthner et al. teaches selecting one of the plurality of load balancing determinations as an alternate load balancing determination, the alternate load balancing determination being employed to select the server when the time stamp associated with the metric information used by the primary load balancing determination is expired, another time stamp being associated with metric information employed by the alternate load balancing determination (column 1, lines 50-52 and 58-62 and column 2,lines 44-45 of Guenthner et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by alternate load balancing determination being employed to select the server when the time stamp associated with the metric information used by the primary load balancing determination is expired because if the primary method is not successful then the system is able to use an alternate method to balance the network.

Regarding claim 12, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of Claim 11, further comprising selecting one of the plurality of load balancing determinations.

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach of time stamps. Guenthner et al. teaches selecting one of the plurality of load balancing determinations as a fallback load balancing determination, the fallback load balancing determination being employed to select the server when the time stamp associated with metric information used by the primary load balancing determination and the other time stamp associated with metric information employed by the alternate load balancing determination are expired (column 1, lines

50-52 and 58-62 and column 2,lines 44-45 of Guenthner et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by fallback load balancing determination being employed to select the server when the time stamp associated with metric information used by the primary load balancing determination and the other time stamp associated with metric information employed by the alternate load balancing determination are expired because if neither the primary or alternate method is not successful then the system is able to use an fall back method to balance the network.

4. Claim 13 and 53 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. as applied to claim 1-7, 16-22, 30-32, 37, 39, 50, 51, 54, 55, 59, and 60 above and further in view of Shah et al.

Regarding claim 13, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of Claim 7, further comprising a plurality of EDNSs and each data center including at least one of a server array controller (column 1, line 9 of Brendel et al.), host machine (column 1, lines 37-39 of Brendel et al.) and EDNS (column 2, lines 27-28 of Brendel et al.).

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach plurality of EDNSs that are separately disposed at a plurality of geographically distributed data centers. Shah et al. teaches plurality of EDNSs that are separately disposed at a plurality of geographically distributed data centers (column 2, line 7 of Shah et al.). Therefore it would have

been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by plurality of EDNSs that are separately disposed at a plurality of geographically distributed data centers because a DNS will be able to have quicker access to a EDNS.

Regarding claim 53, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the apparatus of claim 50, wherein the metric information further comprises at least packet completion rate (column 9, lines 20-22 of Hu).

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach hop count and round trip time. Shah et al. teaches wherein the metric information further comprises one of a hop count (column 2, line 28 of Shah et al.) and round trip time (column 1, lines 9-10 of Shah et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by wherein the metric information further comprises one of a hop count and round trip time because this is important in determining how to best balance the load of the network.

5. Claim 14-15 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al. as applied to claim13 and 53 above, and further in view of Wallis.

Regarding claim 14, Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al. teaches the method of 13 and plurality of EDNSs.

Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al.does not teach employing the copy of metric information to select a particular server at that will optimally balance the load for accessing resources. Wallis teaches wherein at least one of the plurality of EDNSs is a secondary EDNS, the secondary EDNS storing a copy of the metric information collected by the primary EDNS, the secondary EDNS employing the copy of metric information to select a particular server at that will optimally balance the load for accessing resources (column 3, lines 46-48 of Wallis). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al. by employing the copy of metric information to select a particular server at that will optimally balance the load for accessing resources because this will help the system choose the most efficient server to balance the network.

Referring to claim 15, Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al. teaches the method of 13 and plurality of EDNSs.

Brendel et al in view of Hu and further in view of Takahashi et al. and Shah et al. does not teach collecting metric information that is employed to select a particular server that will optimally balance the load for accessing resources. Wallis teaches wherein at least one of the plurality of EDNSs is a secondary EDNS, the secondary EDNS collecting metric information that is employed to select a particular server that will optimally balance the load for accessing resources (column 3, lines 46-48 of Wallis). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi

et al. and Shah et al. by collecting metric information that is employed to select a particular server that will optimally balance the load for accessing resources because this will help the system choose the most efficient server to balance the network.

6. Claim 23-24 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. as applied to claim 1-7, 16-22, 30-32, 37, 39, 50, 51, 54, 55, 59, and 60 above and further in view of Wallis.

Regarding claim 23, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of Claim 4 and server array controller, host machine, server, path and wide ip configuration (column 1, line 9 and column 1, lines 37-39 and column 2, lines 27-28 of Brendel et al.).

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach enabling statistics to be generated for a particular aspect of the network. Wallis teaches further comprising generating statistics from metric information collected by the EDNS and enabling statistics to be generated for a particular aspect of the network (column 3, lines 46-48 of Wallis). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by enabling statistics to be generated for a particular aspect of the network because this allows the system to best determine what servers need a particular type of static or dynamic load balancing performed.

Referring to claim 24, Brendel et al in view of Hu and further in view of Takahashi et al. teaches the method of Claim 23 and load balancing determination.

Brendel et al in view of Hu and further in view of Takahashi et al. does not teach generated statistics. Wallis teaches wherein the load balancing determination is at least partially based on the generated statistics (column 3, lines 50-54 of Wallis). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. by load balancing determination is at least partially based on the generated statistics because this allows the system to best determine what servers need a particular type of static or dynamic load balancing performed.

Regarding claim 29, Brendel et al. teaches the method of Claim 23, wherein the statistics for the local DNS include a measure of how often a particular local DNS is used and the number of times that the EDNS received a resolution request from the local DNS (column 2, lines 27-28 of Brendel et al.).

7. Claim 25-26 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis as applied to claim 23, 24, and 29 above, and further in view of Shah et al. and Paul et al.

Regarding claim 25, Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis teaches the method of Claim 23, and the statistics for the server array controller (column 3, lines 50-54 of Wallis).

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis does not teach statistics for the server array controller. Shah et al. teaches wherein the statistics for the server array controller include number of packets between the EDNS and the server array controller and the amount of time the server array controller is active (column 2, lines 2-3 of

Shah et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis by having statistics for the server array controller because this allows the system to best determine what servers need a particular type of static or dynamic load balancing performed.

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and further in view of Shah et al. does not teach delay and access rate. Paul et al. teaches the up versus down availability of the server array controller, the total number of packets in and out of the server array controller, the number of packets processed by the kernel per second, the number of servers managed by the server array controller, the number of times data is refreshed, (column 2, lines 33, 37, and 52 of Paul et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. by statistics for the server array controller including the up versus down availability of the server array controller, the total number of packets in and out of the server array controller, the number of packets processed by the kernel per second, the number of servers managed by the server array controller, the number of times data is refreshed because this allows the system to best determine what servers need a particular type of static or dynamic load balancing performed.

Regarding claim 26, Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis teaches the method of Claim 23 and host machine.

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis does not teach the statistics for the host machine. Shah et al. teaches wherein the statistics for the host machine include the number of servers managed by the host machine (column 2, lines 2-3 of Shah et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis by number of times a particular host machine was chosen by a wide ip for load balancing and the number of times data is refreshed because this allows the system to best determine what servers need a particular type of static or dynamic load balancing performed.

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. does not teach access rate or delay. Paul et al. teaches number of times a particular host machine was chosen by a wide ip for load balancing and the number of times data is refreshed (column 2, lines 33, 37, and 52 of Paul et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. by number of times a particular host machine was chosen by a wide ip for load balancing and the number of times data is refreshed because this allows the system to best determine what servers need a particular type of static or dynamic load balancing performed.

8. Claim 27 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. and Paul et al. as applied to claim 25 and 26 above and further in view of Joffe et al.

Regarding claim 27, Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. and Paul et al. teaches the method of Claim 23, wherein the statistics for the server include the number of times a particular machine was chosen by a wide ip for load balancing, the number of times data is refreshed, and the up versus down availability of the server (column 2, lines 2-3 of Shah et al. and column 2, lines 33, 37, and 52 of Paul et al.)

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. and Paul et al. does not teach of connections. Joffe et al. teaches the number of connections that are handled by the server (column 3, line 67 of Joffe et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. and Paul et al. by having statistics for the server include the number of connections that are handled by the server because this is important in determining how to best balance the load of the network.

9. Claim 28 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis as applied to claim 23, 24, and 29 above and further in view of Shah et al.

Regarding claim 28, Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis teaches the method of Claim 23 and DNS and the packet completion rate between the server array controller and the local DNS, (column 9, lines 20-21 of Hu).

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis does not teach of statistics for the path. Shah et al. teaches wherein the statistics for the path include the average round trip time (RTT) for transactions between the server array controller and a local

DNS, the number of times a specified path is chosen, the number of times that the EDNS has received data about the specified path and the number of hops between routers for a transaction between the local DNS and the selected server (column 1, lines 9-10 and column 2, line 29 of Shah et al.) Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis by having statistics for the path because this is important in determining how to best balance the load of the network.

10. Claim 34 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. as applied to claim 28 above and further in view Joffe et al.

Regarding claim 34, Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. teaches the method of Claim 24, wherein the generated statistics include a quality of service value that is related to the sum of separate portions of collected metric information, including packet rate, round trip time, hops, virtual server capacity, and completion rate (column 1, lines 9-10 and column 2, line 29 of Shah et al. and column 9, lines 20-21 of Hu).

Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. does not teach topology. Joffe et al. teaches the generated statistics include a quality of service value that is related to the sum of separate portions of collected metric information, including topology (column 3, lines 9-10 of Joffe et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the

WWW server for resource based load balancing of Brendel et al in view of Hu and further in view of Takahashi et al. and Wallis and Shah et al. by generated statistics including a quality of service value that is related to the sum of separate portions of collected metric information, including topology because quality of service values and knowing the topology of the network help to balance the load in an efficient manner.

11. Claim 35-36 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. as applied to claim 34 above and further in view Paul et al.

Regarding claim 35, Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. teaches the method of Claim 34 and metric information (column 3, lines 47-48 Wallis).

Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. does not teach of determining the weight of metric information. Paul et al. teaches wherein each portion of the metric information is separately multiplied by a selectable value that determines the weight of that portion of the metric information in generating the quality of service value (column 3, lines 47-48 Wallis and column 1, lines 24-25 of Paul et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. by determining the weight of metric information because this helps the system determine what metric information is more important in balancing the network load.

Referring to claim 36, Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. teaches the method of Claim 34 and statistics (column 3, lines 47-48 Wallis).

Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. does not teach of determining the weight of the metric information. Paul et al. teaches wherein the generated statistics include a dynamic ratio value for each virtual server managed by a server array controller, the dynamic ratio value being related to the quality of service value and having selectable values for determining the weight of each portion of the metric information that is employed to generate the dynamic ratio value (column 1, lines 24-25 of Paul et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al in view of Hu and Takahashi et al. and Wallis and further in view of Shah et al. and Joffe et al. by determining the weight of the metric information because this helps the system determine what metric information is more important in balancing the network load.

12. Claim 40-43 and 45-48, 52, and 56-58 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al. in view of Shah et al. and further in view of Hu and Takahashi et al.

Regarding claim 40, Brendel et al. teaches an apparatus for balancing a load on a plurality of virtual servers that provide access to a resource associated with a domain name (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.), comprising: (a) a memory for storing logical instructions; (b) a transceiver for communicating over a network; (c) a processor for executing the logical instructions stored in the memory, the execution of the logical

instructions causing actions to be performed (column 7, lines 51-52 and column 12, line 16 of Brendel et al.), including: (i) receiving a request from a client for access to a resource associated with the domain name; (ii) determining the load for each of a plurality of virtual servers that provide access to the resource associated with the domain name and selecting one of the plurality of virtual servers to provide access, the selection of the virtual server being based on a determination for balancing the load on the plurality of virtual servers, and (iii) based on the determination for balancing the load, resolving an Internet protocol (IP) address of the selected virtual server, wherein a subsequent accessing of the resources associated with the domain name at the resolved IP address of the selected virtual server by the client will cause the load to be balanced on the plurality of virtual servers (column 5, lines 33-40 and column 6, lines 20-26 and column 7, lines 19-23 of Brendel et al.).

Brendel et al. does not teach wherein at least one of the plurality of virtual servers is disposed in a geographic area that is separate from another geographic area where at least one other of the plurality of virtual servers is disposed. Shah et al. teaches wherein at least one of the plurality of virtual servers is disposed in a geographic area that is separate from another geographic area where at least one other of the plurality of virtual servers is disposed (column 2, line 7 of Shah et al.). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. by wherein at least one of the plurality of virtual servers is disposed in a geographic area that is separate from another geographic area where at least one other of the plurality of virtual servers is disposed because the system is able to efficiently respond to the request of clients in various geographic locations.

Brendel et al. in view of Shah et al. does not teach determining the load out of band for each of a plurality of servers. Hu teaches determining the load out of band for each of a plurality of virtual servers (column 2, line 15-16 of Hu). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Shah et al. by determining the load out of band because this allows the system to respond quicker to a client request.

Brendel et al. in view of Shah et al. and Hu does not teach selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS. Takahashi et al. teaches receiving a request for access to resources associated with a domain name from a domain name system (DNS), and selecting one Internet Protocol (ip) address associated with the plurality of virtual servers to provide the access, resolving the Internet protocol (ip) address for the domain name in response to the request from the DNS (column 1, line 23-65). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the WWW server for resource based load balancing of Brendel et al. in view of Shah et al. and Hu by selecting an IP address associated with a plurality of virtual servers and receiving a request from a DNS and providing the selected IP address in response to the DNS because this way the system is not in direct contact with the client and is an extension to the DNS and thus helps to balance the load on servers that are geographically spread out.

Regarding claim 42, 52, and 56, Brendel et al. teaches the apparatus of claim 40, [50], and 55 [wherein the collected metric information is employed for balancing the load on the plurality of virtual servers] (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.)

Brendel et al. does not teach wherein at least one of the plurality of virtual servers is disposed in one geographic area and at least another of the plurality of virtual servers is disposed in another geographic area. Shah et al. teaches wherein at least one of the plurality of virtual servers is disposed in one geographic area and at least another of the plurality of virtual servers is disposed in another geographic area (column 2, line 7 of Shah et al.).Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. by wherein at least one of the plurality of virtual servers is disposed in one geographic area and at least another of the plurality of virtual servers is disposed in another geographic area because the system is able to efficiently respond to the request of clients in various geographic locations.

Regarding claim 47 and 57, Brendel et al. teaches the apparatus of claim 40 and 55, (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.).

Brendel et al. does not teach wherein the performed actions further comprise enabling an EDNS disposed at one geographic location to make the load balancing determination by selecting a virtual server that is disposed at another geographic location. Shah et al. teaches wherein the performed actions further comprise enabling an EDNS disposed at one geographic location to make the load balancing determination by selecting a virtual server that is disposed at another geographic location (column 2, line 7 of Shah et al.). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. by wherein the performed actions further comprise enabling an EDNS disposed at one geographic location to make the load balancing determination by selecting a virtual server that is disposed at another geographic

location because the system is able to efficiently respond to the request of clients in various geographic locations.

Regarding claim 48 and 58, Brendel et al. teaches the apparatus of claim 40 and 55, (column 6, lines 56-57 and column 7, lines 15-16 of Brendel et al.).

Brendel et al. does not teach wherein the performed actions further comprise enabling an EDNS disposed at one geographic location to employ another EDNS disposed at another geographic location to make the load balancing determination for selected server. Shah et al. teaches wherein the performed actions further comprise enabling an EDNS disposed at one geographic location to employ another EDNS disposed at another geographic location to make the load balancing determination for selected server (column 2, line 7 of Shah et al.). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. by wherein the performed actions further comprise enabling an EDNS disposed at one geographic location to employ another EDNS disposed at another geographic location to make the load balancing determination for selected server because the system is able to efficiently respond to the request of clients in various geographic locations.

Regarding claim 41, Brendel et al. teaches the apparatus of claim 40, where in the plurality of virtual servers are generated by at least on server array controller, and wherein at least a portion of at least one node server is employed by each server array controller to generate each virtual server (column 2, lines 18-28 of Brendel et al.).

Referring to claim 43, Brendel et al. teaches the apparatus of claim 40, wherein determining the load for each virtual server, further comprises collecting metric information out

of band regarding each virtual server, and wherein the metric information is employed to determine at least a portion of the balancing of the load for the plurality of the virtual servers in advance of receiving the request (column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.).

Regarding claim 45, Brendel et al. teaches the apparatus of claim 40, wherein the performed actions further comprise enabling an agent to communicate metric information regarding at least one of a server, virtual server, and a server array controller to at least one of another server array controller, a primary EDNS, and a secondary EDNS (column 1, line 9 and column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.).

Referring to claim 46, Brendel et al. teaches the apparatus of claim 40, wherein the performed actions further comprise enabling a UDP based protocol for communicating metric information by at least one of an agent server array controller, primary EDNS, and secondary EDNS (column 1, line 9 and column 2, lines 27-28 and column 6, lines 56-57 and column 23, line 51 of Brendel et al.).

13. Claim 44 and 49 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,774,660 to Brendel et al. in view of Shah et al. and Hu and Takahashi et al. as applied to claim 40-43 and 45-48, 52, and 56-58 above, and further in view of Joffe et al.

Referring to claim 44, Brendel et al. in view of Shah et al. and Hu and Takahashi et al. teaches the apparatus of claim 40, wherein the load balancing of the plurality of virtual servers, further comprises enabling at least one geographic based load balancing determination, including hop count (column 2, line 28 of Shah et al.

Brendel et al. in view of Shah et al. and Hu and Takahashi et al. does not teach network topology, and global availability. Joffe et al. teaches load balancing of the plurality of virtual servers, further comprises enabling at least one geographic based load balancing determination, including, network topology, and global availability (column 3, lines 9-10 of Joffe et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. in view of Shah et al. and Hu and Takahashi et al. by teaches load balancing of the plurality of virtual servers, further comprises enabling at least one geographic based load balancing determination, including, network topology, and global availability because this allows the system to balance the load throughout the network.

Referring to claim 49, Brendel et al. in view of Shah et al. and Hu and Takahashi et al. teaches the apparatus of claim 40, wherein the performed actions further comprises at least one of a plurality of load balancing determinations, including selecting the virtual server based on hop counts between the selected virtual server and a local DNS for the client (column 2, line 28 of Shah et al.), selecting the virtual server based on round trip times between the selected virtual server and the local DNS for the client (column 1, lines 9-10 of Shah et al.).

Brendel et al. in view of Shah et al. and Hu and Takahashi et al. does not teach and selecting the virtual server based on a topology of the network. Joffe et al. teaches and selecting the virtual server based on a topology of the network (column 3, lines 9-10 of Joffe et al.). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the WWW server for resource based load balancing of Brendel et al. in view of Shah et al. and Hu and Takahashi et al. by selecting the virtual server

based on a topology of the network because this allows the system to balance the load throughout the network.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to balancing load distribution on a WAN in general: Zisapel et al., Leighton et al., Vepa et al., Johnson et al., Jindal et al., Johnson et al., Karger et al., Coile et al.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to April L Baugh whose telephone number is 703-305-5317. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal D Dharia can be reached on 703-305-4003. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ALB

RUPAL DHARIA
SUPERVISORY PATENT EXAMINER